

NEOTROPICAL SPECIES OF THE
GENUS PERROTTETIA (CELASTRACEAE)

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Type material of P. quinduensis H.B.K. and P. lanceolata Karst. has not been seen, but both species are fully described and evaluated in the original descriptions and depicted in exceptional detail in the excellent illustrations of each. Holotypes of all the other species have been available from herbaria in which they are deposited, namely: F, LL, MICH, MO and US. This has made possible a definitive study, but examination of type material of P. quinduensis and P. lanceolata will be necessary to fully evaluate these species, to which it has not been possible to assign any recent collections. Most of the specimens studied and annotated are in the Lundell Herbarium (LL). They represent collections received for identification and on exchange.

PERROTTETIA H.B.K., Nov. Gen. & Sp. 7: 73. 1825

Shrubs or trees; stipulate; leaves alternate, petiolate, with domatia in axils of primary nerves beneath, and sometimes in axils of veins scattered over blade, margin serrate, serrulate, denticulate or entire, the teeth callosed, spreading to appressed; inflorescences axillary or borne on old wood, pedunculate or sessile, solitary or fasciculate, paniculate, often diffusely branched, usually puberulent or tomentellous; flowers minute, dioecious, sessile or pedicellate; calyx 5-parted, the sepals small, usually shorter than petals; petals 5, valvate, small, pubescent within and marginally, or glabrous; ovary 2-celled; style elongate with bifurcate stigma with long reflexed lobes, or the stigma subsessile and lobed; fruit baccate, 2-celled, 2- to 4-seeded.

Type species: Perrottetia quinduensis H.B.K., Nov. Gen. & Sp. 7: 75. t. 622. 1825.

Key to Sections

Leaf blades areolate, the veins impressed; leaf margin serrate or serrulate, with callosed teeth spreading; inflorescences sessile, fasciculate in leaf axils; flowers pedicellate, the pedicels usually elongate, sometimes short; calyx glabrous or obscurely and sparsely puberulent; sepals

ciliolate or glabrous, often subequal to petals but narrower; petals white-pubescent within and marginally, except in ciliolate P. ovata I. Areolatae

Leaf blades reticulate with elevated veins; leaf margin entire or sometimes minutely serrulate-denticulate with appressed teeth; inflorescences solitary in leaf axils, pedunculate; flowers sessile, or essentially so; calyx usually obscurely and sparsely puberulent; petals glabrous within, often ciliate like the sepals II. Reticulatae

Key to Species

I. Areolatae

Domatia large, up to 5 mm. long with large long aperture parallel to midvein in axils of basal nerves of leaves, usually puberulent within; sepals and petals white pubescent within or marginally. Mexico, Guatemala, El Salvador 1. P. longistylis

Domatia small, usually less than 1 mm. long, either dome-like with central aperture, or pit-like and barbate, axillary in primary nerves and sometimes dispersed over blade in axils of veinlets.

Sepals and petals glabrous or nearly so, usually white ciliolate; pedicels very slender, up to 2 cm. long; leaves thin, ovate or ovate-elliptic, broadly rounded at base. Mexico 2. P. ovata

Petals white-pubescent within and marginally; sepals usually ciliolate, rarely pubescent within; pedicels black, glabrous, usually 1 cm. long or less; leaves ovate, lanceolate or oblongish, often widest above middle.

Style elongate, usually equalling ovary, sometimes longer; stigma bifurcate with long reflexed lobes; leaves often widest above middle, serrulate with callosed teeth. Costa Rica, Panama, Venezuela, Peru 3. P. multiflora

Style very short, stigma subsessile; leaves inconspicuously serrulate-denticulate, not widest above middle. Venezuela 4. P. lanceolata

II. Reticulatae

Leaves large, ovate-elliptic, broadest at base, usually 6--8.5 cm. wide, rounded and usually emarginate or subcordate at base.

Inflorescences glabrous; leaves rounded at base. Colombia 5. *P. calva*

Inflorescences minutely tomentulose or finely puberulent.

Inflorescences minutely tomentulose, yellowish; leaves subcordate at base. Colombia 6. *P. maxima*

Inflorescences finely puberulent; leaves emarginate at base.

Panama 7. *P. excelsa*

Leaves lanceolate, or oblong, often widest above middle; base usually narrowed or rounded, and usually acutish, usually 2.5--5 cm. wide.

Leaves pilose-tomentulose beneath, pubescence densest along petiole, midvein and primary lateral veins.

Leaf margin subentire; sepals 0.7 mm. long; petals ciliolate; stigma subsessile. Colombia 8. *P. caliensis*

Leaf margin remotely denticulate; sepals very small; petals not ciliolate; stigma sessile.

Colombia 9. *P. quinduensis*

Leaves glabrous or puberulent beneath.

Leaves long and narrowly lanceolate-oblong, rounded at base; subglabrous beneath; inflorescences rather sparsely and minutely puberulent 10. *P. distichophylla*

Leaves lanceolate, narrowed at base and acutish, glabrous beneath; inflorescences densely puberulent, the pubescence yellowish.

..... 11. *P. sessiliflora*

1. PERROTTETIA LONGISTYLIS Rose, Contr. U.S. Nat. Herb. 5: 110. 1897. Mexico: Veracruz, Izhuatlancillo near Orizaba, M. Bourgeau 2827 (holotype, US; xerox, LL); Municipio Chacomán, 3.2 km. SW of Chacomán and junction with Fortín-Huatusco highway, on the gravel road to Xocotta, alt. 1400 m., Nov. 18, 1981, M. Nee 23324 (LL), small tree. Mexico: Chiapas, Volcan Tacaná, Aug. 1938, Eizi Matuda 2429 (LL); Mt. Ovando, along stream, alt. 2200 m., Nov. 14-18, 1939, Matuda 3982 (LL), tree, 15 m., 35 cm.

diam.; Cascada, near Siltepec, alt. 1600 m., March 4, 1945, Matuda 5101 (LL); Municipio Jitotol, along road to Pueblo Nuevo Solistahuacan, 5 miles S of Jitotol, elev. 5600 ft., Aug. 19, 1956, D. E. Breedlove 11937 (LL), tree 30 ft. tall. Mexico: Jalisco, 13 km. al N de La Cuesta, sobre el camino a Talpa, alt. 1100 m., Nov. 22, 1960, J. Rzedowski 15167 (LL), arbol de 6 m. de alto. Mexico: Michoacan, Cascada de Tzararacua, cerca de Uruapan, fondo de cañada, alt. 1500 m., May 4, 1966, J. Rzedowski 22330 (LL), arbor de 10 m. de alto. Guatemala: Dept. San Marcos, Finca Armenia, San Rafael, pie de la Cuesta to Carrizal, past Finca Africa, alt. 1300--1600 m., Aug. 9-12, 1980, J. D. Dwyer 15324 (LL), tree 8 m., perianth lemon-green. El Salvador: Dept. Santa Ana, Montecristo Cloud Forest, alt. 1900 m., July 22, 1977, Maria Luisa Reyna s.n. (LL), capulincillo.

The remarkably large domatia in the axils of the primary nerves at the base of the leaf blade set P. longistylis apart from all the other species of the Neotropics. It appears to be related to P. multiflora Lundell, a species not recorded north of Costa Rica which ranges south to Venezuela and Peru. The two species have similar flowers.

2. PERROTTETIA OVATA Hemsl., Diag. Pl. Nov. 1: 6. 1878. Mexico: Veracruz, Jalapa, ad 4000 ped., Galeotti 7117 (holotypes, Kew, LL), arborescens. Perrottetia glabrata Rose, Contr. U.S. Nat. Herb. 5: 110. 1897. Mexico: Veracruz, on Mt. Orizaba, alt. 1607--2400 m., March 18, 1894, E. W. Nelson 313 (holotype of P. glabrata, US; xerox, LL), shrub 24 to 30 dm. high. Mexico: Veracruz, borders of woods near Jalapa, 4000 ft., April 3, 1890, C. G. Pringle 8088 (A, GH, LL), 15--20 ft. Mexico: Hidalgo, Chapulhuacan, in wet Liquidambar mountain forest, alt. 1300 m., July 12, 1937, C. L. Lundell & Amelia A. Lundell 7167 (LL), shrub, 6 m. tall, fruits red. Mexico: Puebla, Municipio de Zacapoaxtla, cascada de La Gloria, cerca de Apulco, alt 1400 m., April 12, 1974, J. Rzedowski 31864 (LL), arbol de 6 m. de alto, flores rosadas. Mexico: San Luis Potosi, Municipio de Xilitla, 5 km. al W de Ahuacatlan, bosque de Liquidambar, alt. 1500 m., June 26, 1959, J. Rzedowski 10878 (LL), arbol de 6 m. de alto. Mexico: Oaxaca, Distr. de Ixtlan, a 19 km. al N de la desviación a Yolox, alt. 2890 m., July 1, 1982, Refugio Cedillo Trigos 1583 y Rafael Torres (LL), arbusto de 2 m. de alto, frutos rojas.

A very distinct species which is endemic to the mountains of southern and eastern Mexican states. No specimens have been seen from Chiapas. The collections in Hidalgo and San Luis Potosi are the northernmost records for the genus.

3. PERROTTETIA MULTIFLORA Lundell, sp. nov. -- Arbor parva, 5 m.; ramuli juveniles parce adpresse puberuli; folia petiolata, petiolo 5--12 mm. longo, canaliculato; lamina chartacea, subtus minute adpresse puberula, glabrata, ovato-lanceolata, oblonga vel oblanceolata-oblonga, 6--15 cm. longa, 2.2--5.5 cm. lata, basi rotundata, acutiuscula, apice acuminata vel caudato-acuminata,

domatia parva, margine breviter serrulata; inflorescentia minute puberula vel tomentella, paniculata, multiflora, ramosissima, subsessilis, ad 9 cm. longa et lata; pedicelli ad 1.3 mm. longi, glabri; flores femineae 1--1.3 mm. latae; sepala parva; petala intus albo-pubescentia, ovata, 0.4--0.6 mm. longa, margine albo-pubescentia; stylus elongatus, ad 0.6 mm. longus, glaber, apice bifurcatus.

Panama: Chiriqui Province, La Fortuna hydroelectric project, on forested slope south side of river, along stream, March 20, 1978, Barry Hammel 2017 (holotype, LL), tree to 5 m. tall.

The densely flowered much-branched subsessile pistillate inflorescences with very slender puberulent branches, the elongated glabrous pedicels, small flowers, and usually long, glabrous style with spreading bifurcate stigma are features distinguishing P. multiflora. The callosed teeth of the leaf margin, caudate leaves rounded and mostly acutish at base but slightly decurrent, and the very small domatia in the axils of some nerves are other characteristics to be noted. The fasciculate inflorescences are often borne on old wood. The sepals are triangular, usually very small, shorter than petals, and often ciliolate. The leaves are variable in form.

The taxon is represented by a series of collections from Costa Rica and Panama, several collections from Peru, and one from Venezuela, all in either the Lundell Herbarium (LL), or the Missouri Botanical Garden Herbarium (MO).

Some collections from Costa Rica have been distributed as P. longistylis Rose, a related but very distinct species not to be confused with P. multiflora. The relationship of P. multiflora to P. lanceolata Karst. remains to be resolved. The collections from Venezuela and Peru may be referable to that species, or an undescribed taxon. Too few South American collections are available to clarify the status of the entities.

4. *PERROTTETIA LANCEOLATA* Karst., Fl. Columb. ii. 47. t. 124. Venezuela: Silvas Coloniae Tovar, prope Caracas, alt. 1800 m.

There appears to be a close relationship between P. multiflora Lundell and P. lanceolata. The original illustration of P. lanceolata shows a very short style, the stigma being subsessile. Also, its leaves are ovate-lanceolate and appear to have a finer serrulate-denticulate margin.

P. multiflora has leaves often widest above the middle. This feature together with the elongated style and differences in pubescence are among the characteristics which separate this taxon from P. lanceolata.

5. *PERROTTETIA CALVA* Cuatr., Lloydia 11: 225. 1948. Colombia: Comisaria del Putumayo, alto de la Cordillera, entre Valle de Sibundoy y Mocoa, El Portachuelo, 2000 m. alt., Dec. 30, 1946, J. Cuatrecasas 11478 (holotype, F; isotype, US; xerox, LL), tree.

According to Cuatrecasas, "This species is undoubtedly related to P. quinduensis H.B.K. It differs from the latter and other known South American species by its glabrous branchlets, leaves and inflorescences."

In the cited isotype (US), branchlets are very minutely puberulent as in P. maxima Cuatr. Also, in the axils of the primary nerves there are very small domatia along the very sparsely hirsute midvein.

6. PERROTTETIA MAXIMA Cuatr., Lloydia 11: 224. 1948.

Colombia: Dept. del Valle, Cordillera Occidental, vertiente occidental, Hoya del río Digua, lado izquierdo, Piedra de Moler, bosques, 900--1180 m. alt., Aug. 19-28, 1943, J. Cuatrecasas 15014 (holotype, F; isotype, US; xerox, LL), large tree.

According to Cuatrecasas, "P. maxima is a large tree characterized by its large, broad and generally cordate leaves."

The axillary domatia along the midvein are pitted and sparsely hirsute.

7. PERROTTETIA EXCELSA Lundell, sp. nov. -- Arbor; ramuli

minutissime puberuli, graciles; folia supra et subtus novella minutissime puberula, glabrata, petiolata, petiolo canaliculato, ad 1 cm. longo, puberulo; lamina membranacea vel chartacea, lanceolata vel late lanceolata, ad 20 cm. longa, ad 9.5 cm. lata, apice subabrupte caudato-acuminata, basi rotundata et emarginata vel late subcordata, margine integra, domatia glabra, parva, nervis 7--10, nervis minute puberulis, secundariis elevatis arcuato ascendentibus; inflorescentia axillaris, solitaria, pedunculata, paniculata, ad 15 cm. longa, 9 cm. lata, multiflora, ramulis patentibus divaricatis, rachis ramulisque minute puberulis; flores feminei sessiles, ca. 1.5 mm. lat.; sepala parva, ovato-triangularia, 0.3--0.4 mm. longa, extus minute puberula; petala late ovato-triangularia, acuta, ad 0.7 mm. longa, parce et minute puberula; ovarium glabrum; stigma subsessile, obscure bilobatum.

Panama: Prov. Colon, ridge top leading north from Rio Escandaloso towards Cerro Burja, along stream, elev. 500 ft., April 27, 1978, Barry Hammel 2692 (holotype, LL), tree 15 meters tall, drooping branches, fruits yellow green.

P. excelsa, of which some collections report trees up to 25 m. tall, is related to P. maxima Cuatr. of Colombia, a taxon of higher altitudes. The glabrous dome-like domatia with apical apertures, inflorescences and leaves very minutely puberulent, and the leaves strictly entire distinguish P. excelsa. In P. maxima the leaves are subentire, the domatia hirsute and pitted, not domed and elevated with apical aperture, and the inflorescences "luteolo tomentulosi" are differences which are notable. Both taxa resemble P. sessiliflora Lundell, which differs at once in leaf form and in having glabrous branchlets.

Species of *Perrottetia*, like those in so many genera of the Celastraceae, must be recognized by such characteristics and differences which seem minor but are significant.

8. *PERROTTETIA CALIENSIS* Cuatr., *Lloydia* 11: 223. 1948. Colombia: Dept. del Valle, Cordillera Occidental, vertiente oriental, Hoya del río Cali, río Pichinde entra Quebrada de Juntas y El Recreo, 2070--2260 m. alt., Aug. 7, 1946, J. Cuatrecasas 21997 (holotype, F; isotype, US; xerox, LL), arbor, 15 m. alta.

According to Cuatrecasas, "*P. caliensis* is closely related to *P. quinduensis* H.B.K. According to description, *P. caliensis* differs from *P. quinduensis* by its slightly denticulate and less tomentulose leaves, its ciliate petals, its extremely short style, fewer flowers and by the number of seeds."

9. *PERROTTETIA QUINDUENSIS* H.B.K., *Nova Genera et Species Plantarum* 7: 75. t. 622. 1825. The resemblance of *P. caliensis* Cuatr. to *P. quinduensis* H.B.K., as described and illustrated, is such that the two are recognized based on the judgment of Cuatrecasas, who had a series of collections of his taxon from Colombia on which to reach this conclusion.

P. quinduensis, known only from Colombia, is well illustrated and described in the original description. No type material of it has been seen, and the status of *P. caliensis* must remain in doubt.

10. *PERROTTETIA DISTICHOPHYLLA* Cuatr., *Lloydia* 11: 224. 1948. Colombia: Dept. del Valle, Costa del Pacífico, río Cajambre, 5--80 m. alt., April 29, 1944, J. Cuatrecasas 17243 (holotype, F; isotype, US; xerox, LL), arbor, 15 m.

According to Cuatrecasas, "*P. distichophylla* can easily be distinguished from other species of the genus by its narrowly oblong and long apiculate leaves, the margin of which is entire or slightly denticulate in the upper half, the nearly glabrous surface, the narrow stipules, the slender, puberulent inflorescences, the very small flower, the very short, obtuse sepals, and by the very short style."

The rudimentary sepals in the type are a feature of the taxon, for the smaller are only about 0.2 mm. long. The domatia along the midvein are pitted or dome-like and sparsely hirsute.

11. *PERROTTETIA SESSILIFLORA* Lundell, *Phytologia* 1: 451. 1940. Costa Rica: Prov. San José, vicinity of El General, alt. 915 m., Dec. 1935, Alexander F. Skutch 2325 (holotype, MICH; isotype, MO; xerox & fragment, LL), forest tree 8 m. high, fls. greenish-yellow. Costa Rica: Prov. Cartago, Chitaria de Turrialba, elev. 700 m., Aug. 6, 1972, L. J. Poveda 145 (F; xerox & fragment, LL), árbol de 50 cm. DAP y 18 m. de alt. Panama: Prov. Veraguas, primary forest, on Caribbean slope above Río Primero Brazo 5 miles NW of Santa Fe, alt. 700--1200 m.,

Mar. 18-19, 1973, Thomas B. Croat 23183 (LL) tree, 5 m., flowers greenish-yellow.

P. sessiliflora Lundell, known only from Costa Rica and Panama, has small hirsute domatia as in P. maxima Cuatr. of Colombia. P. maxima superficially resembles P. sessiliflora, but differs notably in leaf form, and in having stems very minutely puberulent, not glabrous.

The Thomas B. Croat collection is the first recorded from Panama.

Excluded Species

PERROTTETIA COSTARICENSIS Lundell, *Phytologia* 1: 451. 1940. Perrottetia racemosa Standl., *Field Mus. Pub. Bot.* 18: 633. 1937, non P. racemosa Loes. Costa Rica: Yerba Buena, northeast of San Isidro de Heredia, wet forest, 2000 m., Standley & Valerio 49894 (holotype, F).

Attempts to examine this type have been fruitless, for it is reported to be "lost" in the herbarium at Field Museum. That the taxon is referable to Perrottetia is doubtful. As described by P. C. Standley, the racemose flowers with pedicels 3 mm. long, and sepals recurved, are not characteristics of the genus.

GOUPIA GUATEMALENSIS (CELASTRACEAE) A GENUS AND SPECIES NEW TO MESOAMERICA

Cyrus Longworth Lundell

GOUPIA Aubl., *Hist. Pl. Guiane Fr.* 1: 295. t. 116. 1775

GOUPIA GUATEMALENSIS Lundell, sp. nov. -- Arbor, 15 m. alta; ramuli crassiusculi vel graciles, dense hirtelli; folia petiolata, petiolo 2--4 mm. longo, canaliculato; lamina glabrata, subcoriacea vel coriacea, domatia barbata, oblanceolata, 6.5--14 cm. longa, 2--3.8 cm. lata, apice angusta, obtusiuscula, basi cuneata, nervis 5--9, margine integra; inflorescentia hirtella, axillaris, gracilis, paniculata, 3--7 cm. longa, longipedunculata, pauciflora; pedicelli 1.2--3.5 mm. longi; hirticalyx; sepala 4 vel 5, lanceolata vel anguste triangularia, acuta, 1--1.4 mm. longa, erecta; petala ad 6 mm. longa, basi lanceolata, apice attenuata, longe anguste lineariligulata, margine involuta, apice inflexa; stamina ca. 1.4 mm. longa, glabra; filamenta crassa, ca. 0.5 mm. longa; antherae lanceolato-oblongae crassae, ca. 1 mm. longae, apice obtusae; ovarium glabrum, apice attenuatum; stylus crassus, ca. 1 mm. longus; stigma bilobatum.

Guatemala: Dept. Alta Verapaz, Cerro Chinaja, on eastern end, between Sacacao and Yalpemech, alt. 200--400 m., March 21, 1942, Julian A. Steyermark 45183 (holotype, F; fragment & xerox, LL), tree 45 ft.

This is the first record of the genus Goupia in North America. Described by Aublet from the Guianas, there are three or four